

Suspended

Trend Study 2-22-96

Study site name: Box Elder Canyon.

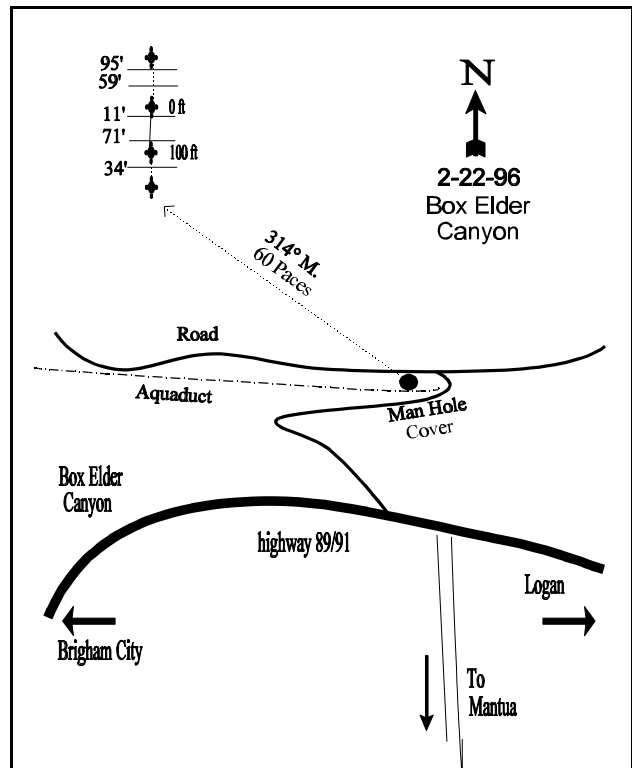
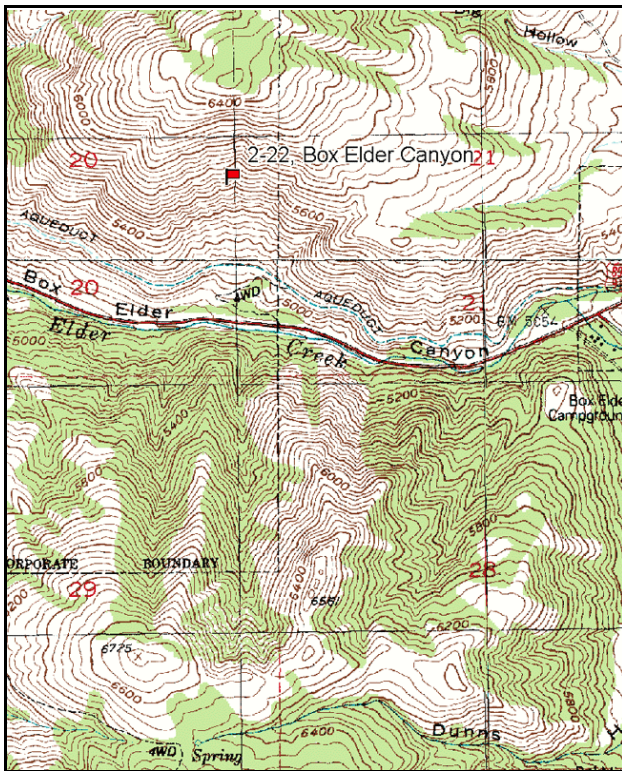
Vegetation type: Mountain Brush.

Compass bearing: frequency baseline 165 degrees magnetic.

Frequency belt placement: line 1 (11 & 71ft), line 2 (34ft), line 3 (59 & 95ft).

LOCATION DESCRIPTION

From the western most Mantua turnoff on U.S. 89 in Box Elder Canyon, travel east for 0.1 miles to a left-hand (i.e., north) turn. Proceed on this road for 1.2 miles in a generally westerly direction. Stop here. From the manhole cover on the left hand side of the road, walk 60 paces on an azimuth of 314 degrees magnetic to the 200-foot mark of the baseline. Walk 200 feet to the north to the 0-foot baseline stake. The baseline runs from the 0-foot post to the 100-foot mark on an azimuth of 180 degrees. The 0-foot end of the baseline consists of a green steel fencepost, 12"-18" high and marked by a red browse tag #7992. Line three runs off the 0-foot baseline stake at 345 degrees magnetic.



Map Name: Mount Pisgah, Utah

Diagrammatic Sketch

Township 9N, Range 1W, Section 20

UTM 4594803 N, 418970 E

DISCUSSION

Trend Study No. 2-22

*****SUSPENDED** - This site was suspended in 2001 and will be discontinued. This site was poorly placed and should be moved to a better, more representative location. There is little browse forage on the site and it appears that deer and elk primarily use the area as a travel corridor.

The Box Elder Canyon trend study samples a steep (65% to 70%), rocky, south-facing slope on the north side of Box Elder Canyon. Deer are known to use areas on the north side of the canyon throughout the winter. Elevation of the site, about midway up the canyon, is approximately 5,160 feet. The site supports a limited browse resource with deer and elk more likely to move through the area than spend much time on the steep talus covered slope. Some of the few preferred browse species were heavily hedged in the past, but currently browse appears unutilized. Pellet groups of deer and elk were noted in small numbers along trails. This is a poor site that should be moved to a better location with more desirable populations of browse.

The slopes in Box Elder Canyon are classified as "Foxol Rock Outcrop Complex," an excessively drained, shallow, and slightly acid soil. These soils have poor water holding capability and contain large quantities of quartzite rock (Chadwick et al. 1975). This study site is very steep and in most places resembles a "talus" slope because of high rock content. Plant cover is rather poor and the erosion rate appears to be high. Rock cover has ranged from 63% in 1984 to 53% in 1996. No bare ground is exposed. No soil sample was collected from the site in 1996 due to the lack of soil. No rock index measurements were taken because all rock is right on the surface. Surface soil temperatures are high.

Browse composition is considerably depleted from former times. Historically, this area supported mixed mountain brush and big sagebrush/grass communities. Preferred browse included mountain big sagebrush, bitterbrush, and serviceberry which have been replaced by Rocky Mountain smooth sumac, white rubber rabbitbrush, and Oregon hollygrape. Although these shrubs provide a fair amount of forage, it is not of the quality or quantity that mixed mountain brush is normally capable of producing. In future years, we can expect this trend to continue. Currently ('96), no mountain big sagebrush occurs on the site and only 60 serviceberry plants/acre were estimated. No reproduction is evident. Utilization of some of the preferred species was moderate to heavy in the past, but current use is light and it appears that deer and elk just pass through the area.

Oregon hollygrape is currently the most abundant browse with an incredible 52,240 plants/acre estimated in 1996. The increase in density from 1990 data is due to the much larger sample used in 1996. These plants are low growing and unutilized. Rocky Mountain smooth sumac is also abundant with 4,460 plants/acre estimated in 1996. Most plants are unutilized. Mature individuals average just over 2 feet in height. With the extended sample size used in 1996, poison ivy (*Rhus radicans*) was picked up in the sample. Due to classification errors in the field, it was not counted in the shrub density strips. It grew in isolated large clumps of a few hundred low growing plants.

The herbaceous understory is depleted. The only perennial grass on the site is bluebunch wheatgrass. Annual grasses are more abundant and accounted for 78% of the grass cover and 59% of all herbaceous cover in 1996. Forbs are depleted. Only three species are abundant. These include Louisiana sage, northern sweetvetch, and dyers woad. It was reported in 1984 that dyers woad was abundant and "in no other area does this plant appear so abundant or so competitive. Although more desirable forbs are present, their abundance will be limited by the continued dominance of dyers woad." For some reason, dyers woad was not included in the sample that year so no data is available. Seasonal personnel must have thought it was an annual and not counted it. Dyers woad was also abundant in 1990 with a quadrat frequency of 80%. Quadrat frequency

declined to 37% in 1996. The harsh conditions on the site combined with drought have likely had a negative effect on this herbaceous species.

1984 APPARENT TREND ASSESSMENT

Soil and vegetative conditions appear to be in a state of decline. Accelerated erosion is a fundamental problem that affects not only soil trend but also the reproduction and growth of plants. Another obvious problem is the prevalence of dyers woad.

1990 TREND ASSESSMENT

The very steep (65%), south-facing slope of Box Elder Canyon has very limited soil and low site potential for production of significant quantities of browse forage. Oregon grape is the most frequent species. Some sumac is utilized by deer. Nested frequency of the only valuable perennial herbaceous species, bluebunch wheatgrass, decreased significantly. Dyers woad dominates the herbaceous understory with a quadrat frequency of 80%. Weeds and other disturbed site species have a competitive advantage on the continually moving, talus-like rocks that make up the ground surface. If there ever was any topsoil on this slope, it is gone now.

TREND ASSESSMENT

soil - stable but in very poor condition (3)

browse - down and in very poor condition (1)

herbaceous understory - down and in very poor condition (1)

1996 TREND ASSESSMENT

Soil conditions are poor with rock covering most of the ground surface (53%). No bare ground is exposed. Trend is considered stable, yet in poor condition. The browse trend is down with only one preferred species, serviceberry, found on the site. The few shrubs encountered appear unutilized with no reproduction evident. Trend for the herbaceous understory is up slightly due to an increase in sum of nested frequency for bluebunch wheatgrass, combined with a 69% decline in nested frequency of dyers woad.

TREND ASSESSMENT

soil - stable but poor condition (3)

browse - down with few preferred species (1)

herbaceous understory - up slightly but depleted (5)

HERBACEOUS TRENDS --
Herd unit 02 , Study no: 22

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'84	'90	'96	'84	'90	'96	'96
G	Agropyron spicatum	_b 154	_a 48	_a 70	62	24	32	3.63
G	Bromus japonicus (a)	-	-	238	-	-	73	9.76
G	Bromus tectorum (a)	-	-	82	-	-	25	2.76
Total for Annual Grasses		0	0	320	0	0	98	12.52
Total for Perennial Grasses		154	48	70	62	24	32	3.63
Total for Grasses		154	48	390	62	24	130	16.15
F	Allium spp.	-	3	-	-	3	-	-
F	Artemisia ludoviciana	27	10	24	11	5	10	1.39
F	Astragalus convallarius	-	-	3	-	-	1	.03
F	Cirsium spp.	5	-	3	2	-	1	.38
F	Cymopterus longipes	-	-	-	-	-	-	.00
F	Epilobium brachycarpum (a)	-	-	-	-	-	-	.00
F	Erodium cicutarium (a)	-	-	4	-	-	2	.06
F	Galium aparine (a)	-	-	15	-	-	5	.05
F	Hedysarum boreale	_b 32	_a 6	_{ab} 19	16	3	11	1.20
F	Isatis tinctoria	_a -	_c 218	_b 68	-	80	37	1.40
F	Lactuca serriola	_a -	_b 14	_b 14	-	6	6	.08
F	Melilotus officinalis	-	-	2	-	-	1	.15
F	Phlox longifolia	_a -	_b 12	_{ab} 2	-	5	1	.00
F	Tragopogon dubius	_b 33	_a 14	_{ab} 17	17	6	7	.11
Total for Annual Forbs		0	0	19	0	0	7	0.11
Total for Perennial Forbs		97	277	152	46	108	75	4.77
Total for Forbs		97	277	171	46	108	82	4.88

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --

Herd unit 02 , Study no: 22

T y p e	Species	Strip Frequency	Average Cover %
		'96	'96
B	Amelanchier utahensis	2	.30
B	Chrysothamnus nauseosus consimilis	7	3.75
B	Gutierrezia sarothrae	1	-
B	Mahonia repens	54	10.33
B	Opuntia fragilis	16	.13
B	Prunus virginiana	3	.18
B	Rhus glabra cismontana	62	11.21
B	Rhus radicans	0	1.55
Total for Browse		145	27.47

BASIC COVER --

Herd unit 02 , Study no: 22

Cover Type	Nested Frequency	Average Cover %		
		'84	'90	'96
Vegetation	316	4.75	11.00	41.72
Rock	352	63.00	58.00	53.36
Pavement	37	3.50	5.00	.73
Litter	376	28.50	26.00	29.24
Cryptogams	4	0	0	.01
Bare Ground	-	.25	0	0

SOIL ANALYSIS DATA --

Herd Unit 02, Study no: 22

No soil data available

PELLET GROUP FREQUENCY --

Herd unit 02 , Study no: 22

Type	Quadrat Frequency
	'96
Elk	3
Deer	4

BROWSE CHARACTERISTICS --

Herd unit 02 , Study no: 22

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Amelanchier utahensis																	
Y	84	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	96	-	2	-	-	-	-	-	-	-	2	-	-	-	40	-	2
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	90	-	-	1	-	-	-	-	-	-	1	-	-	-	66		1
	96	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'84		00%			00%			00%			- 1%						
'90		00%			50%			00%			-55%						
'96		67%			00%			33%									
Total Plants/Acre (excluding Dead & Seedlings)												'84	133	Dec:	0%		
												'90	132		50%		
												'96	60		33%		
Artemisia tridentata vaseyana																	
D	84	-	-	3	-	-	-	-	-	-	3	-	-	-	200		3
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'84		00%			100%			00%									
'90		00%			00%			00%									
'96		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'84	200	Dec:	100%		
												'90	0		0%		
												'96	0		0%		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus consimilis																		
Y	84	4	-	-	-	-	-	-	-	-	4	-	-	-	266		4	
	90	1	-	-	-	-	-	-	-	-	-	-	1	-	66		1	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	84	5	1	-	-	-	-	-	-	-	6	-	-	-	400	50	33	
	90	9	-	-	-	-	-	-	-	-	9	-	-	-	600	36	64	
	96	9	-	-	-	-	-	-	-	-	9	-	-	-	180	43	72	
D	84	1	1	-	-	-	-	-	-	-	2	-	-	-	133		2	
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		17%			00%			00%			- 8%							
'90		00%			00%			09%			-75%							
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	799	Dec:	17%			
												'90	732		9%			
												'96	180		0%			
Gutierrezia sarothrae																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40	15	27	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		00%			00%			00%										
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	-			
												'90	0		-			
												'96	40		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Mahonia repens																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
Y	84	294	-	-	-	-	-	-	-	-	294	-	-	-	19600		294	
	90	479	-	-	-	-	-	74	-	-	553	-	-	-	36866		553	
	96	291	-	-	-	-	-	-	-	-	291	-	-	-	5820		291	
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	90	44	-	-	-	-	-	-	-	-	44	-	-	-	2933	6	44	
	96	2321	-	-	-	-	-	-	-	-	2321	-	-	-	46420	5	2321	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	240		12	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%			+51%							
'90		00%			00%			00%			+24%							
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	19600	Dec:	-			
												'90	39799		-			
												'96	52240		-			
Opuntia fragilis																		
Y	84	8	-	-	-	-	-	-	-	-	8	-	-	-	533		8	
	90	11	-	-	-	-	-	1	-	-	10	-	2	-	800		12	
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	90	11	-	-	-	-	-	5	-	-	13	-	3	-	1066	4	16	
	96	22	-	-	1	-	-	-	-	-	23	-	-	-	460	3	23	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	8	-	-	-	-	-	-	-	-	4	-	3	1	533		8	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%			+78%							
'90		00%			00%			25%			-77%							
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	533	Dec:	0%			
												'90	2399		22%			
												'96	540		0%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Prunus virginiana																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	10 11	0	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		00%			00%			00%										
'96		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	0%			
												'90	0		0%			
												'96	80		25%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Rhus glabra cismontana																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
Y	84	10	6	-	-	-	-	-	-	-	16	-	-	-	1066		16	
	90	26	1	1	1	-	-	-	-	-	28	-	1	-	1933		29	
	96	19	-	-	-	-	-	-	-	-	19	-	-	-	380		19	
M	84	1	13	13	-	-	-	-	-	-	27	-	-	-	1800	29 17	27	
	90	6	1	1	-	-	-	-	-	-	5	2	1	-	533	31 20	8	
	96	183	12	-	-	-	-	-	-	-	195	-	-	-	3900	26 27	195	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	5	4	-	-	-	-	-	-	-	7	-	-	2	180		9	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	480		24	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		44%			30%			00%			-14%							
'90		05%			05%			05%			+45%							
'96		07%			00%			.89%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	2866	Dec:	0%			
												'90	2466		0%			
												'96	4460		4%			